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Armour School
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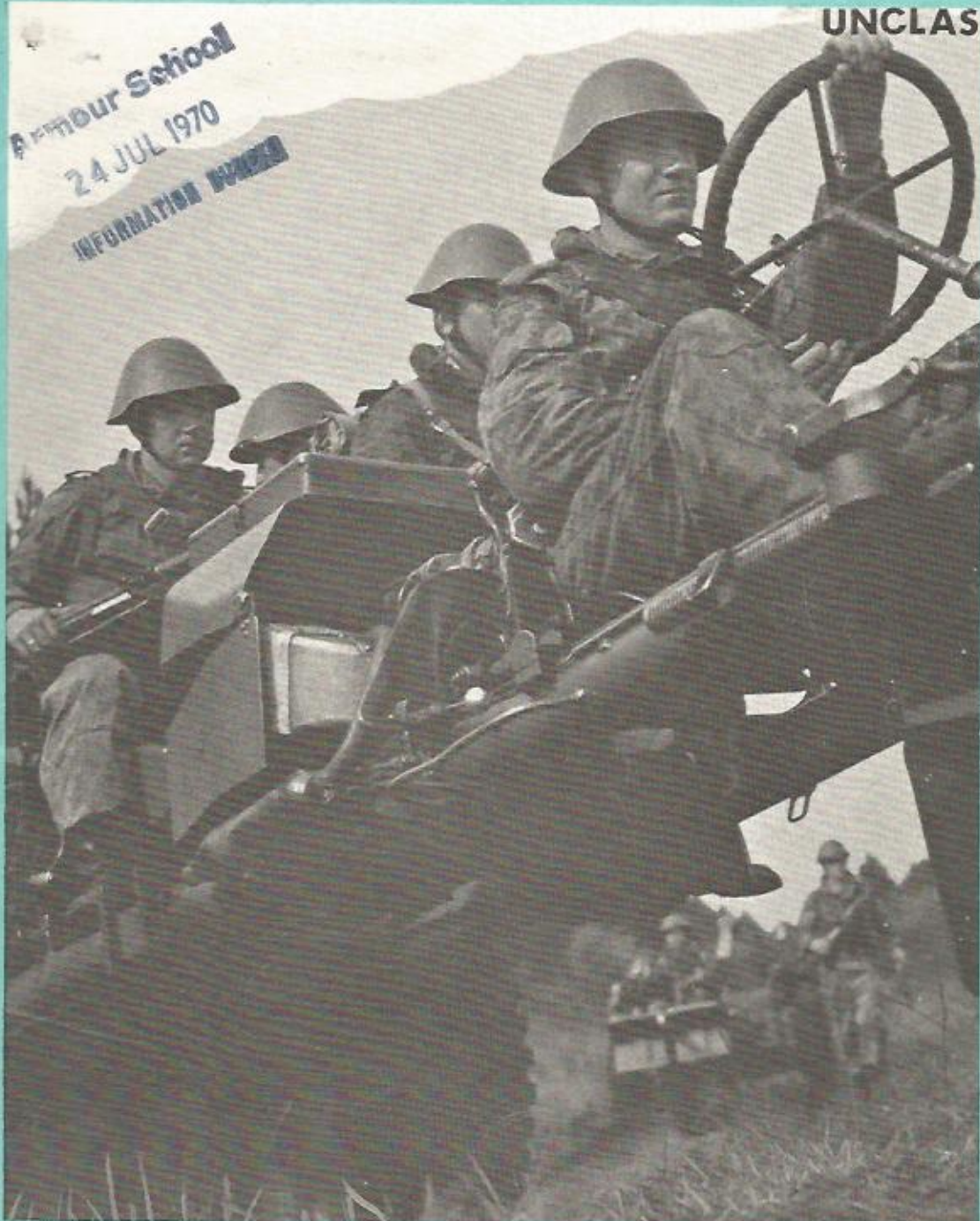
ARMY TECHNICAL INTELLIGENCE REVIEW

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FOREWORD

Some of our readers may wonder what has happened to the January issue. The answer is that a combination of staff shortages and printing problems finally resulted in the October 1969 issue appearing in February 1970. It was therefore decided to date the next numbered edition April 1970. The continually increasing call upon the services of our illustrators for conferences and briefings means that the number of illustrations must be somewhat curtailed in future issues. I am confident however that the result will still be first class.

This month we say goodbye to Major 'Spike' Woolrych who retires from the Army and leaves us after nearly ten years in the branch. We wish him a very happy retirement, thank him for his invaluable contributions in the field of Signals Equipment and again congratulate him on his well deserved MBE in the New Year Honours List. Major John Stevens takes over from him.

As noted in the editorial to the last edition there has been a change of management. I took over from Colonel Tony Nelson just before last Christmas and Major David Corsellis succeeds Lieutenant Colonel Ian Harpur who is now involved in the world of ballistics at the Ordnance Board.



S C SMITH
Colonel
Tech Int (A)

1. MOTOR TRANSPORT

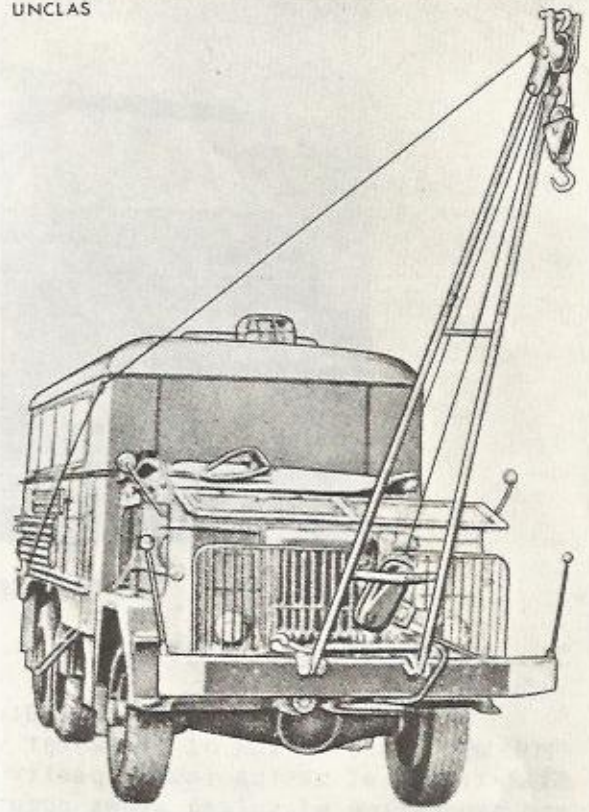
The Polish Type 574 Workshop Truck

The type 574 workshop truck, recently introduced into the Polish Army, is intended for use in repairing vehicles and machinery. The chassis used is the 6 x 6 STAR-660 M1. It has a five speed transmission and an intermediate gear box for cross country use. The workshop equipment consists of appliances and special tools which can be used for field repairs to a wide range of vehicles.

The equipment includes a battery charging plant for up to twelve batteries, a test rig for diesel injectors and fuel pumps, a valve facing machine and two pumps for lubrication. It has a wide range of hand tools, welding and grinding equipment, a small press, a lathe and an anvil.

For field repairs a tubular 'A' frame can be assembled on the front bumper and used as a hoist. It has a capacity of one ton. Three cables of different lengths provide a variety of positions for the hoist. A 1½ ton winch, driven by the vehicle engine, enables loads to be lifted.

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Polish Type 574 Workshop Truck

THE POLISH VEHICLES STAR-28 and 29

The STAR plant is now producing two further vehicles, the STAR-28 and STAR-29, which may enter military service. These vehicles are identical except for the engines. The STAR-28 has a 105 hp diesel engine and the STAR-29 a 105 hp petrol engine. Externally they can be identified by a small plaque behind the cab door. The payload of these 4 x 2 trucks is five tons. They are of metal construction and are fitted with modern cabs, heating and air conditioning which is effective down to -20°C.

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STAR-28 and STAR-29

The Polish Vehicle STAR-66

The motor vehicle plant in Starachowice, which is part of the Polish "POL-MOT" association of the motor vehicle and tractor industry, produces STAR trucks of medium load capacity. It is in this factory that the design and production of Polish cross country vehicles has been concentrated.

The first version of this vehicle, called the STAR-66, went into production half-way through 1958. This was modernised and improved as time went by. The scope and nature of the changes introduced required the vehicle to be redesignated STAR-660 M1 in 1965. The main changes introduced with the STAR-660 M1 consisted of the fitting of:

- hydraulic brake take off for trailer braking.
- wheels with 1200 x 18 tyres with cross-country tread.
- a differential lock for the middle and rear axles.
- a power take off.
- an improved winch.

The Polish Vehicle STAR-66 (Continued)



STAR-660

This was in production until August 1968 when it was superseded by the STAR-660 M2. Although externally almost identical to the STAR-660 M1 the new version has the following main differences:

- a fording capability of up to 1.8 metres.
- a screened electrical system.
- an all metal body.
- a host of minor changes to the electrical system and to the brake system.

The vehicle can be prepared for fording in 20 minutes by the driver. It carries a payload of 4 tons and its six wheels are driven by a 105 HP straight 6 petrol engine.

This is the basic vehicle of the Polish Army.

2. THE A AICV (BMP)

Introduction

During World War II it became apparent to the Soviet Army that there was a requirement for vehicles for the transport of infantry which combined the qualities of mobility and protection from enemy fire with the ability for troops to be able to fight from the inside of the vehicle if required.

The new Soviet combat vehicle is the latest in the line of these vehicles. In fact one could say that it is the first representative of a new class of vehicle in the Soviet Army, a vehicle which combines into one a light amphibious tank and an APC.



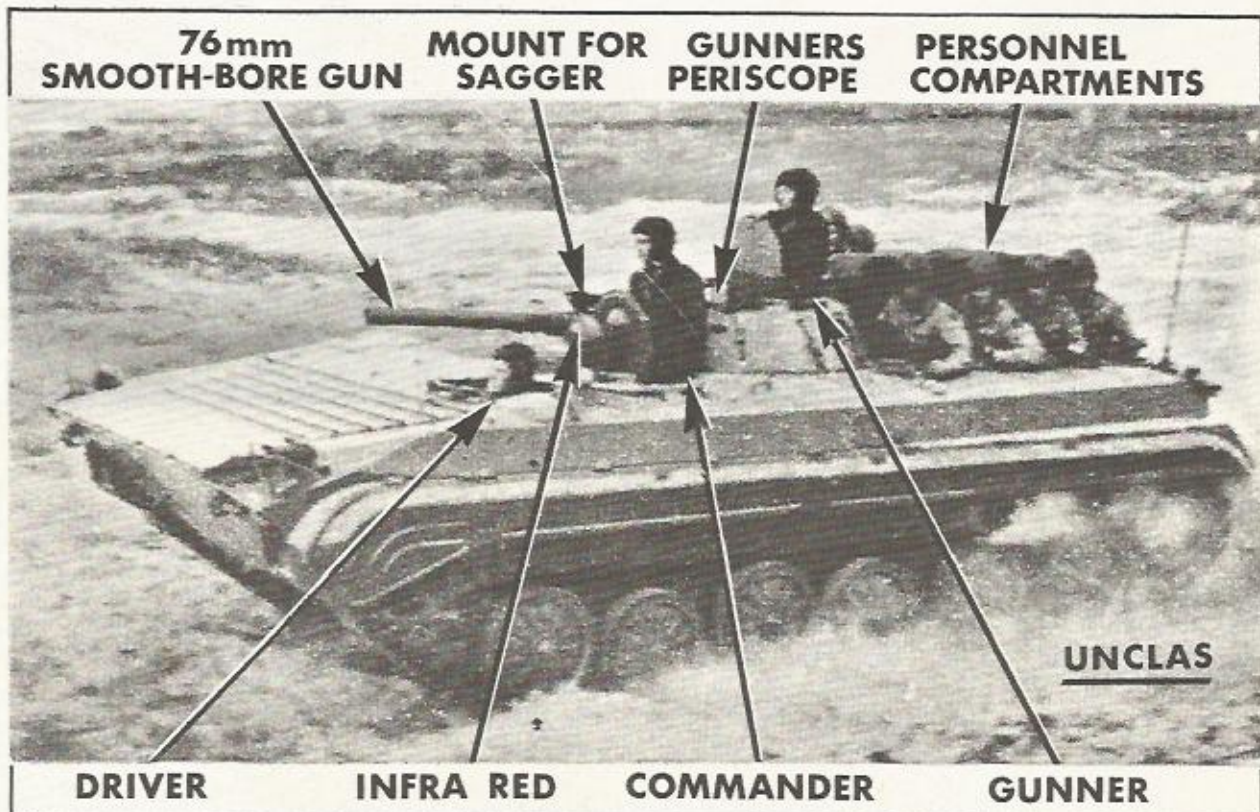
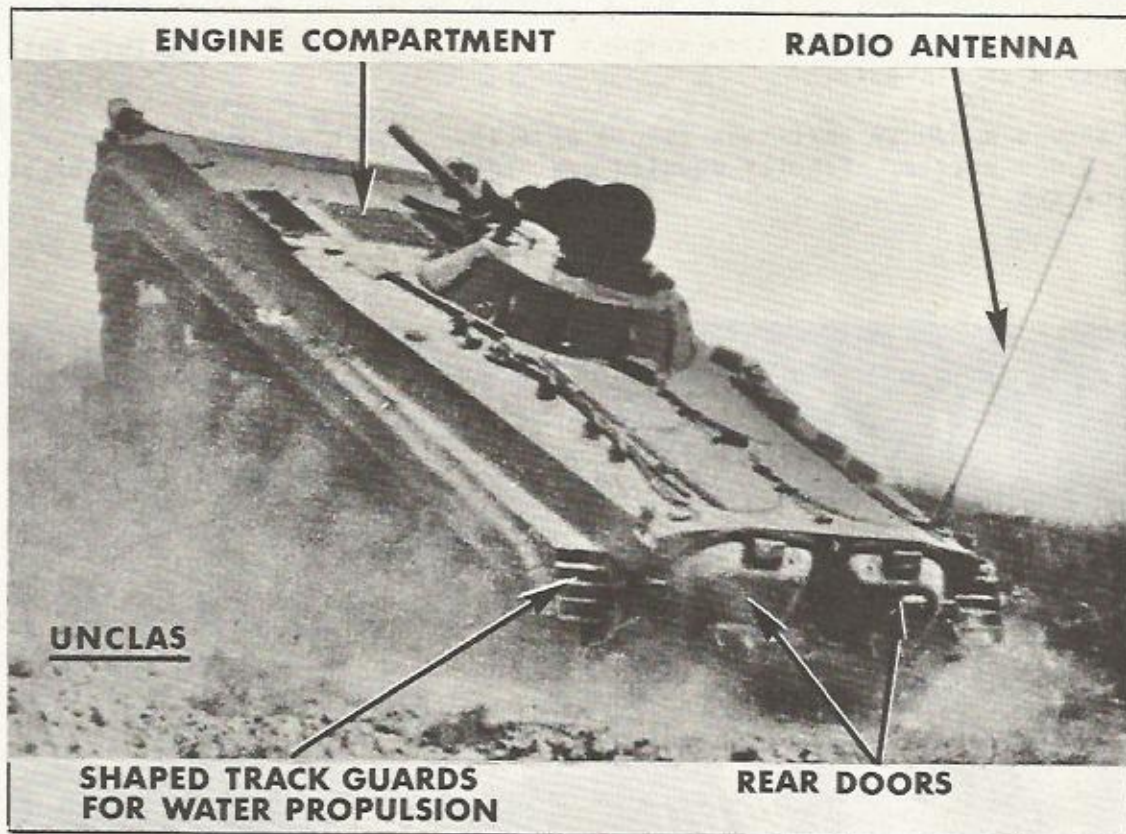
New Soviet Combat Vehicle BMP

Distinctive features

Although the layout of the chassis is new the road wheels are very similar to that of the PT-76 Soviet light tank. The tracks serve to propel the vehicle in water and it is the first time that the Soviets have given up propulsion by water jet or propeller. The drive sprocket is situated in front and is shaped like a star. The track covers are made of some light material. The rear of the track guards are specially shaped to allow water to flow through them. The engine is mounted forward on the right hand side. On the front glacis plate there are a series of metal strips possibly to reinforce the armour as in the Swedish S-tank. The driver sits on the left next to the engine and has three periscopes for use when closed down. Behind him sits the tank commander who has an infra-red searchlight.

The turret which is in the middle of the vehicle and shaped like a truncated cone has room for one person only. Behind the turret is the personnel compartment which contains eight men, four on either side. Each man has a periscope and a firing port. On the top of the personnel compartment there are large flaps which open inwards.

The AAICV (BMP) (Continued)



The AAICV (BMP) (Continued)

Armament

The turret contains three weapons. First a gun of 76 mm calibre which is probably a smooth-bore.

Second a SAGGER anti-tank guided missile. This missile has a range of about 2,000 metres. Finally mounted next to the gun is a 7.62 mm co-axial machine gun.

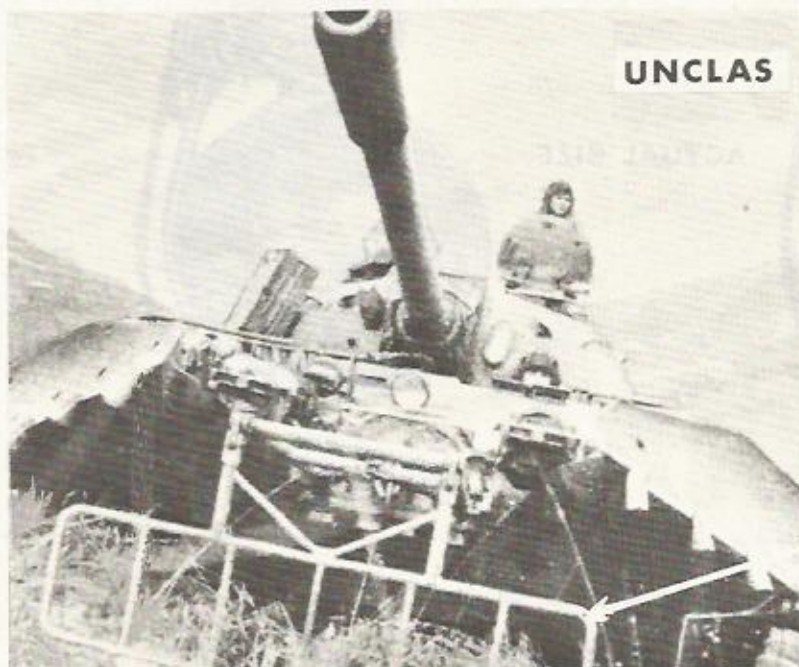


Conclusion

This vehicle is a new and important addition to the Soviet vehicle family. It is a brand new vehicle and not as in the majority of cases a development from a vehicle already in service. It should be kept in mind by everyone as it is likely to be seen in ever increasing numbers.

3. SOVIET BLOC MINE CLEARANCE PLOUGHS

Recent Soviet press articles have shown photographs and mentioned the use of a plough device for the clearance of mines. The photography included here shows T54/55 tanks fitted with the plough devices. The plough blade with its five tines, when lowered into the ground, should clear mines in the path of each tank tread up to a depth of approximately one foot. A depth limiting skid and hydraulic cylinder can also be seen. The tubular frame device shown in the second photograph apparently clears tilt-fuze mines between the areas covered by the ploughs. Since the plough blade need be lowered only when actually clearing mines, the tank at other times retains its normal mobility, unlike those fitted with other clearance devices such as rollers or flails.



Frame for clearing
Tilt Rod Mines

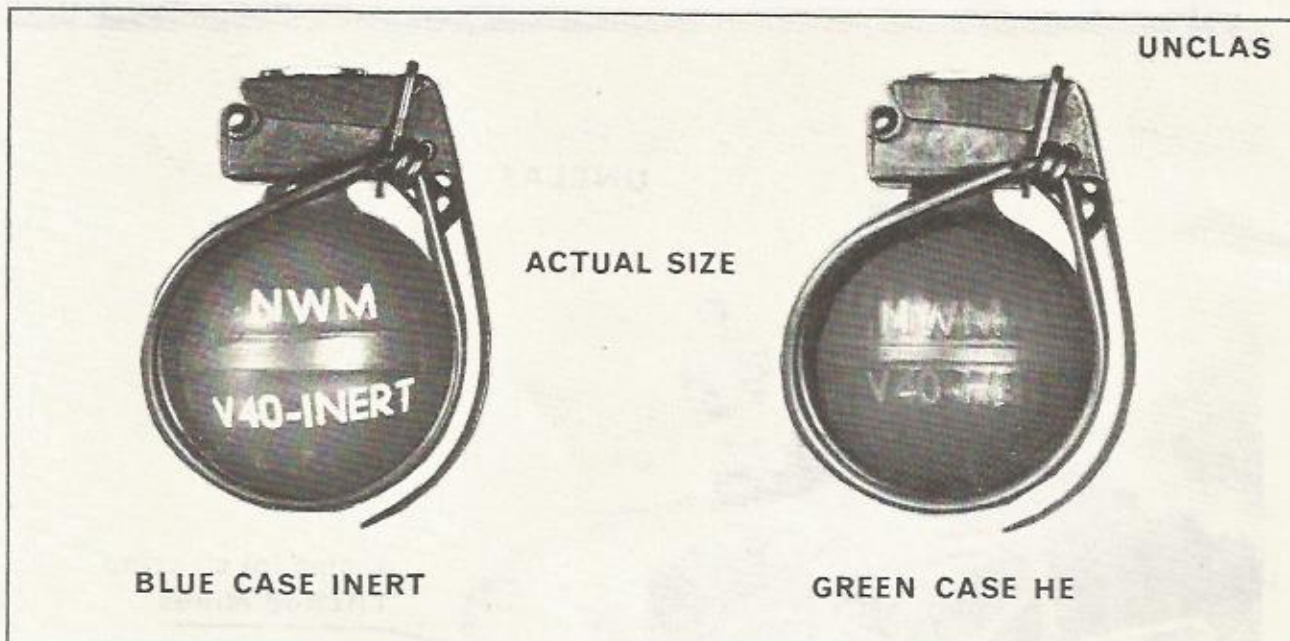
4. INFANTRY WEAPONS

MINI-HAND GRENADE NWM V40 (UNCLAS)

The Netherlands have produced a mini-hand grenade that is lightweight, small, easy-to-grip and provides a psychological as well as a real advantage to the thrower. The fragmentation pattern is lethal at close ranges but the thrower is assured of absolute safety at approximately 25 metres from the detonation point. The grenade can be thrown with the ease of a ball or stone with similar accuracy to distances 50 per cent greater than present hand grenades. The characteristics of the grenade make it of interest to both conventional forces as well as insurgents or saboteurs. Both inert and live Mini Hand Grenades are available.

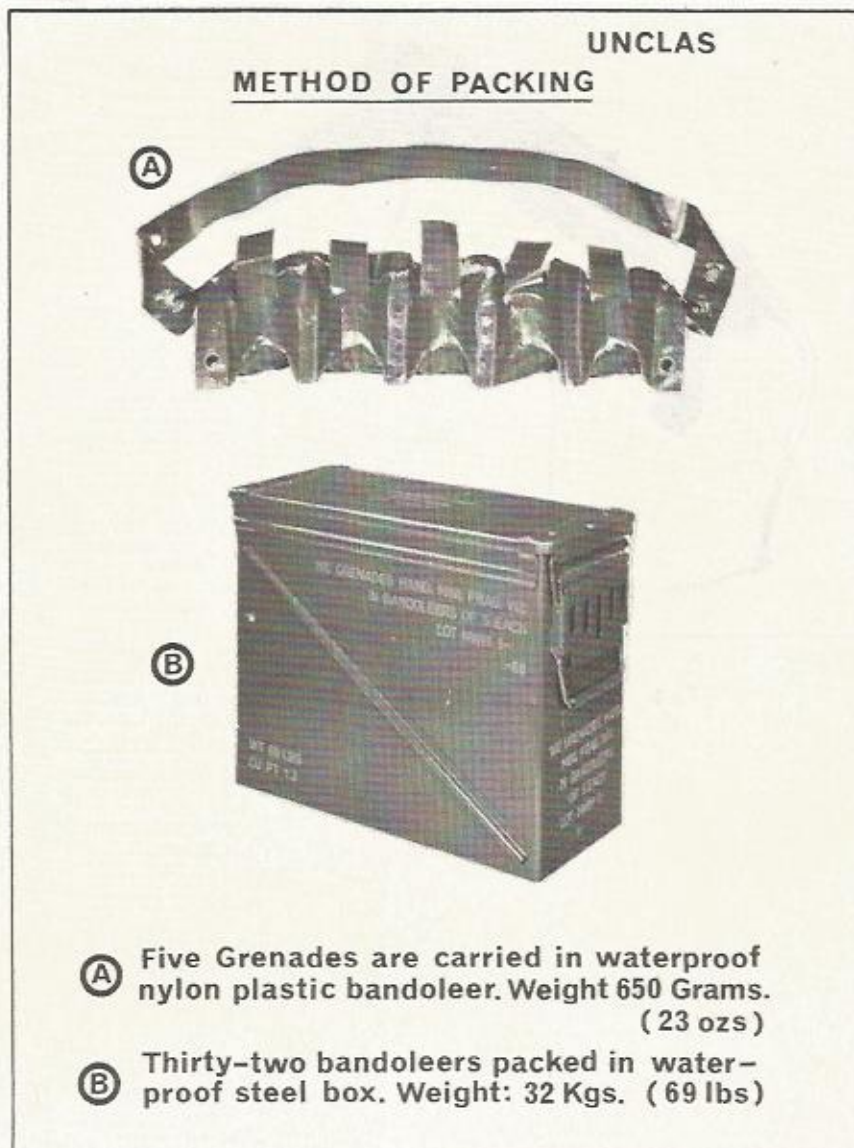
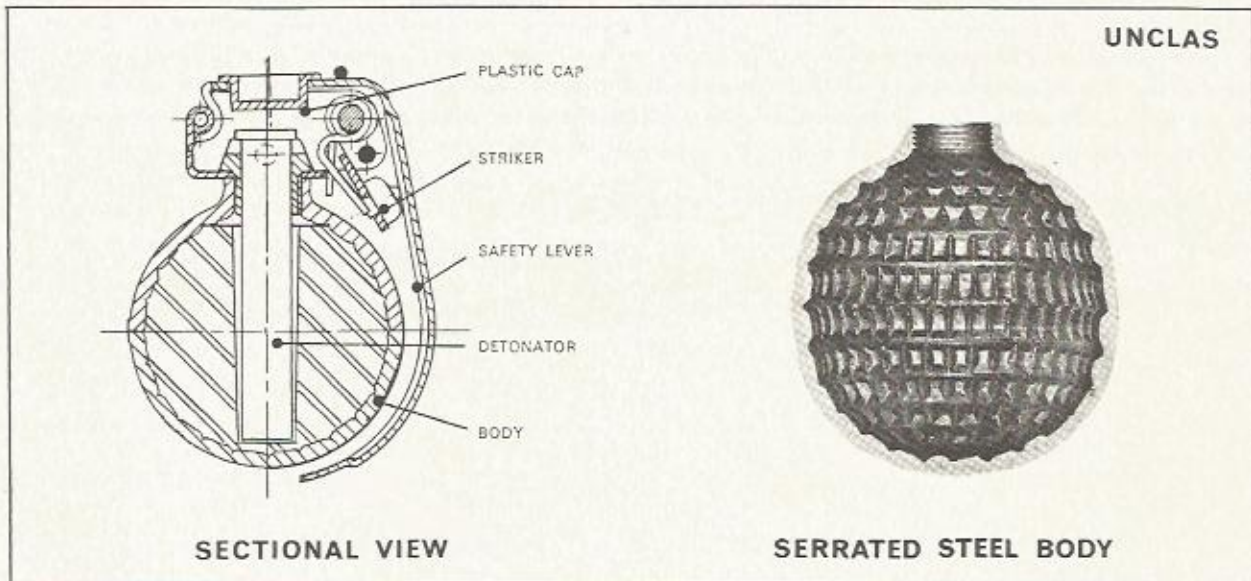
The grenade is detonated by a percussion type firing mechanism that is actuated by a spring loaded striker. A safety lever, which is retained by a safety pin, holds the striker in the cocked position. To arm the grenade the safety pin is removed by pulling on the ring attached to the safety pin, while holding the safety lever against the grenade body. When the grenade is thrown, the safety lever falls away and the striker hits the primer to detonate the main charge after a 4-second delay.

Although weighing only 120 grams (4.2 ounces) the serrated steel body of the grenade explodes into about 326 fragments that are evenly distributed in all directions. Manufacturers from tests, claim 100 per cent casualties within a 3-metre radius. Fragments initially travel at approximately 6,000 feet-per-second, then lose velocity rapidly after 5 metres from the detonation point, thereby giving safety to the thrower at a distance of 25 metres from the point of impact.



Mini Hand Grenades

NWN V40 Grenade (Continued)



Yugoslav 7.62 mm Submachine Gun M56

The M56 Submachine Gun which is of Yugoslav manufacture was introduced to replace the M49 submachine gun. The M56 is a recoil operated gun capable of single or automatic fire with a folding stock and a 32 round magazine. A bayonet can be fitted. Effective range is claimed to be 200 M (219 yards) on semi-automatic and 100 M (109 yards) on automatic. When fitted with a loaded magazine the M56 submachine gun weighs 3.6 kg (7.9 lbs).

The M56 has been exported to most countries that have purchased arms from Yugoslavia.



The Yugoslav M56 Submachine Gun

UI EQUIPMENT

A vacancy exists at Tech Int Army for the reader who correctly identifies the attachment on the end of the rifle shown in the picture below.

Some helpful clues are:

- a. It is NOT a banana
- b. It is NOT a bread roll
- c. It is not associated with the water bottle.

Answers to be forwarded to Inf/AB Desk Officer MOD(A) DI60e.



Not BANG! but POP: Suppressors for Military Small Arms (UNCLAS)

There are obvious advantages for the military in the use of silenced weapons; the stalking of a sentry or a guard dog becomes easier if they can be killed at a distance; the silenced weapon can be used to dispose of isolated outposts without fear of alerting other positions. Silenced weapons have become a standard item for unconventional tasks carried out by Special Forces. Open press have reported the use of silenced firearms by the Viet Cong and Allied Forces in Vietnam.

Although silencers have been outlawed by every nation it has done little to limit their design and manufacture. A silencer is an easily manufactured item which was relatively unheard of in military forces until the publicity that followed the capture by the Soviets of an American pilot. He was armed with a Hi-Standard, Model HDM calibre .22 silenced pistol.

When a firearm is discharged there are in fact two sounds: the sound of the escaping gases and the sound of the projectile passing through the atmosphere. The report of muzzle blast is generated by gases produced when the cartridge fires. The projectile then passes through the air creating its own noise. If the projectile moves at a velocity greater than the speed of sound (about 1,075 feet per second) then it cannot be silenced. THUS there is only one sound, the muzzle blast, that is controlled by a silencer. The sound of the projectile in flight can be controlled by limiting the velocity either by reducing the powder charge or by bleeding off gas pressure.

The silenced firearm for military use should be:-

- a. Capable of accurate fire under any condition to a limited range.
- b. Light as possible yet heavy enough to be stable.
- c. Easy to maintain.
- d. Able to use standard ammunition.



Component Parts of a Typical Suppressor

Suppressors for Military Small Arms (Continued)

The countries that have contributed most to bring the silenced military firearm to its present height of sophistication are: Germany, United States, UK and the USSR. Adolf Hitler demanded an effective silent firearm which was produced by Walter Waffenfabrik. The Russians copied the basic German silencer which became part of the Model 91/30 sniper rifle equipment. UK produced the silenced Sten guns, the silencer of which was later copied by the Germans, and produced in large quantities designated the Gerat Potsdam. The development of silencers has resulted in each major country producing silencers to suit their own weapons. The illustrations show representative silenced weapons from UK, USA, Canada and Czechoslovakia.



5. POWER TOOL SPEEDS MAST ERECTION IN SOVIET AND EAST GERMAN SIGNALS UNITS

To assist in driving in the holdfasts for the stay wires of their R-400 and R-404 Heavy Radio Relay masts (Fig 1), here seen in use in the East German Army, the Soviets equip their Signals Units with an electrically driven power tool (Fig 2). This makes light work of screwing into the ground the screw-ended holdfasts on which the stay-wire reels and winches are mounted (Fig 3).

In addition, this power tool can be used with an earth-auger bit to drill pole holes.



Fig 1
R-400 or R-404 Radio Relay Mast
in Course of Erection

Power Tools for Mast
Erection (Continued)

Fig. 2
ELECTRICALLY POWERED
SCREW HOLDFAST DRIVER

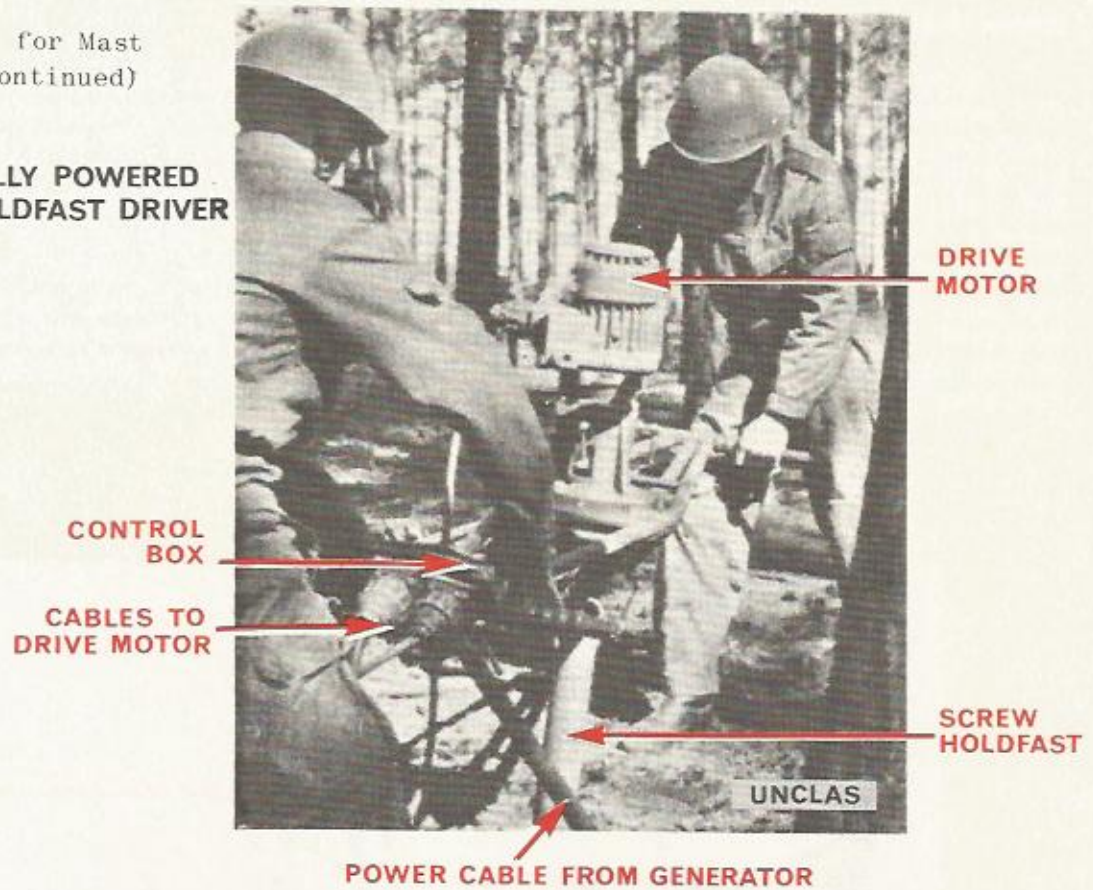


Fig. 3
STAY-WIRE REEL & WINCH
ASSEMBLY ON HOLDFAST.

SCREW HOLDFAST

Power Tools for Mast Erection (Continued)

Electric power is also used in the erection of the mast itself. After the antennas have been attached, with the top mast section inside the base (erector) section lying on the ground, it is raised into the vertical position using the stay-wire winch and a spare mast section as a derrick (Fig 4). The top section is then winched to the top of the base section (which has one open side). The next section is then inserted through the open side of the base section and bolted on. This is then winched up and the process repeated till the full height (30 metres) is reached. Originally the winch, which is attached to the base section, was hand cranked. Now it is electrically driven, as can be seen in Fig 4 where one of the crew is about to attach the power cable to it.

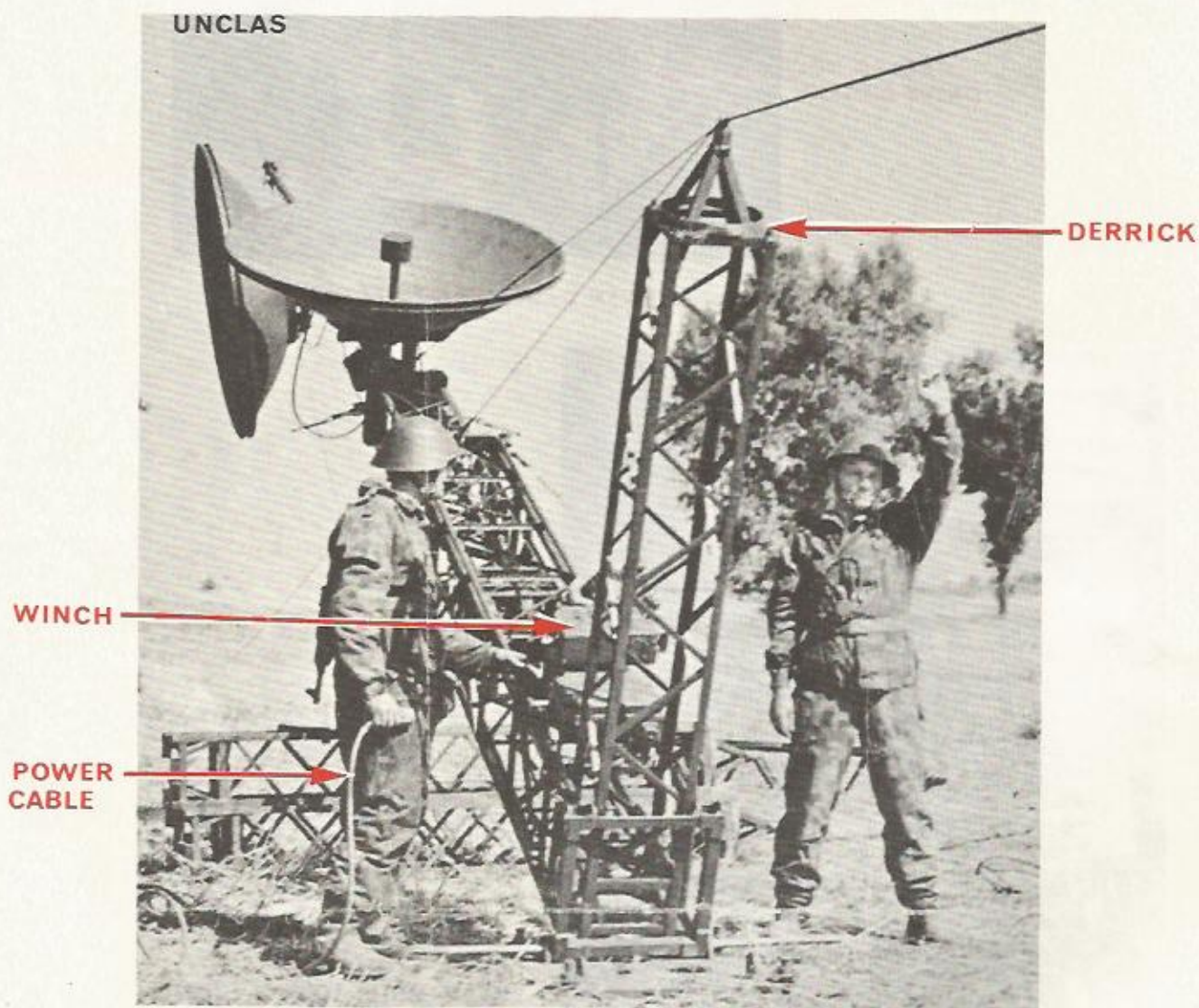


Fig 4

R-404 Mast and Antenna - First
Stage in Erection

Power Tools for Mast Erection (Continued)

As the mast is extended upwards, another member of the crew secures the antenna feeder cables to it at intervals (Fig 5), and also attaches additional stay-wires. The heavy cables seen in this illustration are the Receiver co-axial feeders. The transmitter antenna feeders are the thin wires going to the cones hanging down from the top of the mast, as the Soviets use a surface wave transmission line commonly called a "G-string" for this purpose, instead of the very much heavier and cumbersome co-axial cable.

The use of this power tool and the electrically operated winches has considerably speeded up the erection of this mast and is an example of the emphasis that the Soviets place on the rapid establishment of communications in order to keep pace with their highly mobile forces.

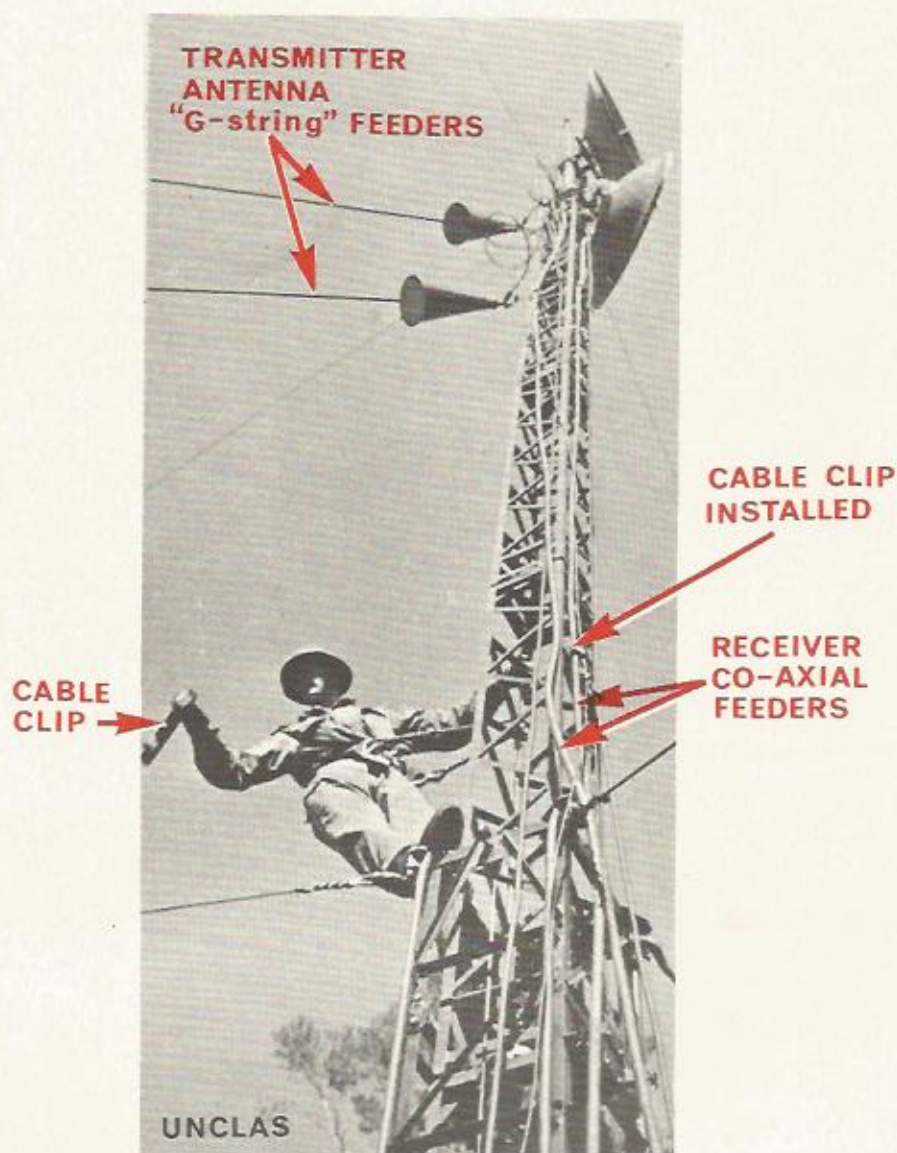


Fig 5

Securing Feeder Cables to Mast
During Erection

6.

SOVIET ARMY MISSILES

System Operation and Performance

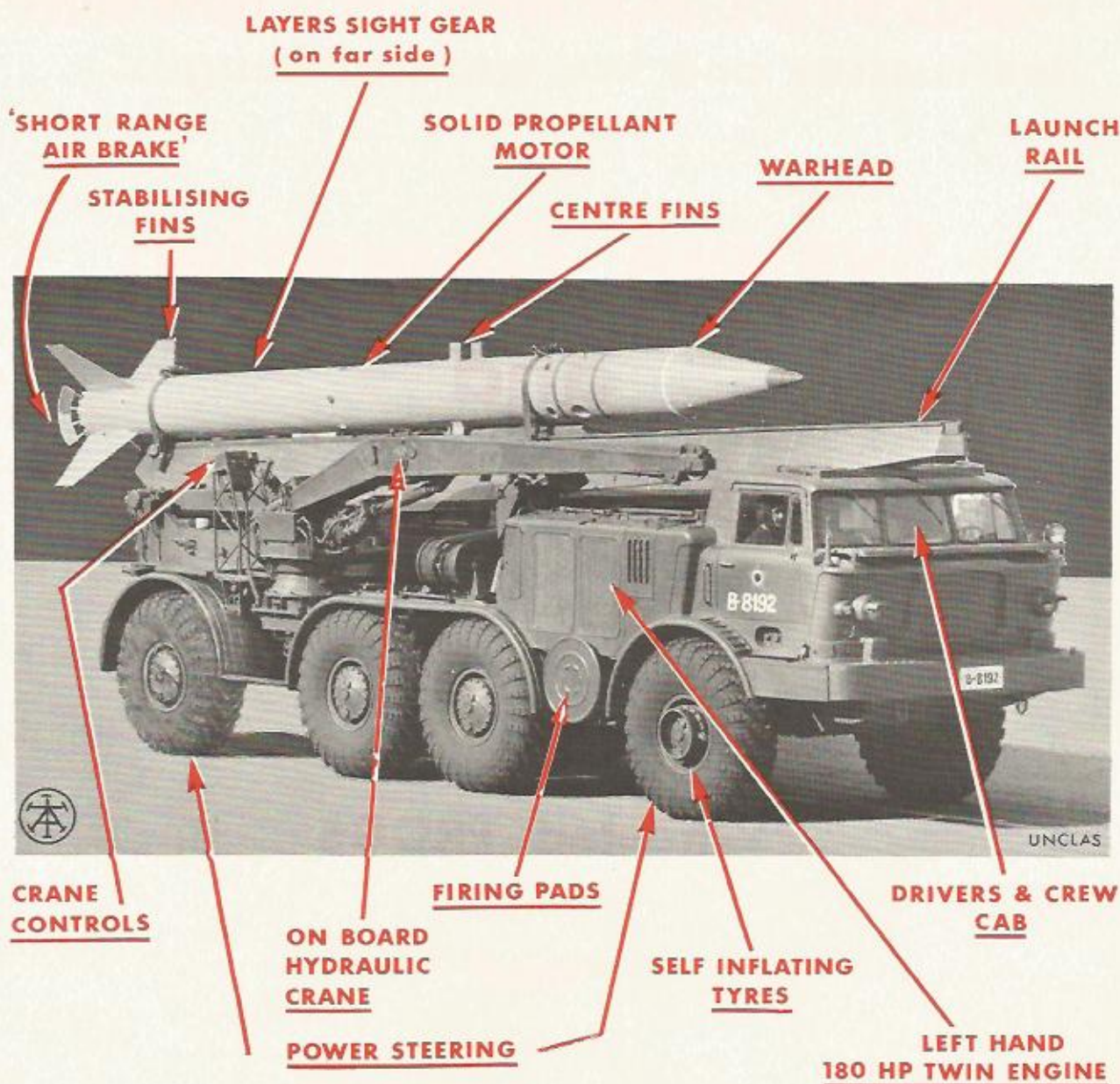
PART 2

Wheeled FROGS

and

Wheeled SCUDS

FROG 7



ZIL 135 WHEELED CHASSIS

DATA

Missile length _____ 30 feet (9.14 metres)
 weight _____ 3 tons (3048 Kgs)
 Range _____ about 70Km
 Probable Warhead types __ Chemical, Nuclear, HE, & Training

The method of operation of FROG 7 is very similar to the older Tracked FROGS although the missile is now more destructive and has greater range...



...however the complete Missile System is a great improvement —

BECAUSE →

The wheeled chassis gives better overall - mobility than tracks



Reloading with its own crane is simpler



Re-supply of missiles by the new ZIL re-supply vehicle is faster



This all makes FROG 7

QUICKER....

SIMPLER....

MORE MOBILE.



— And most of this applies to the new wheeled SCUD 'B' system as well

THE SCUD 'B' WHEELED TEL



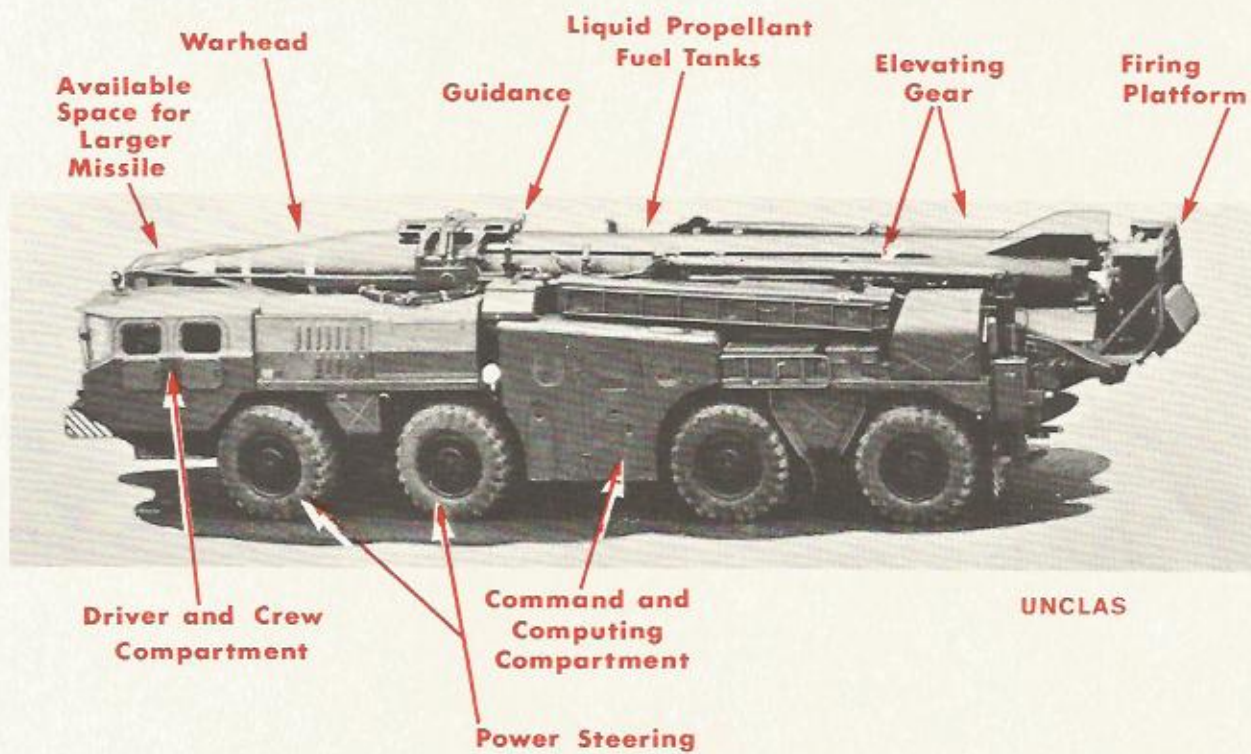
DATA

Missile Length . . . 38 Feet (8.5 Metres)

Weight . . . 7 Tons (7110 Kg)

Range About 250 Km

**Warhead Types . . HE, Chemical, Nuclear
and Training**



MAZ 543 WHEELED CHASSIS